

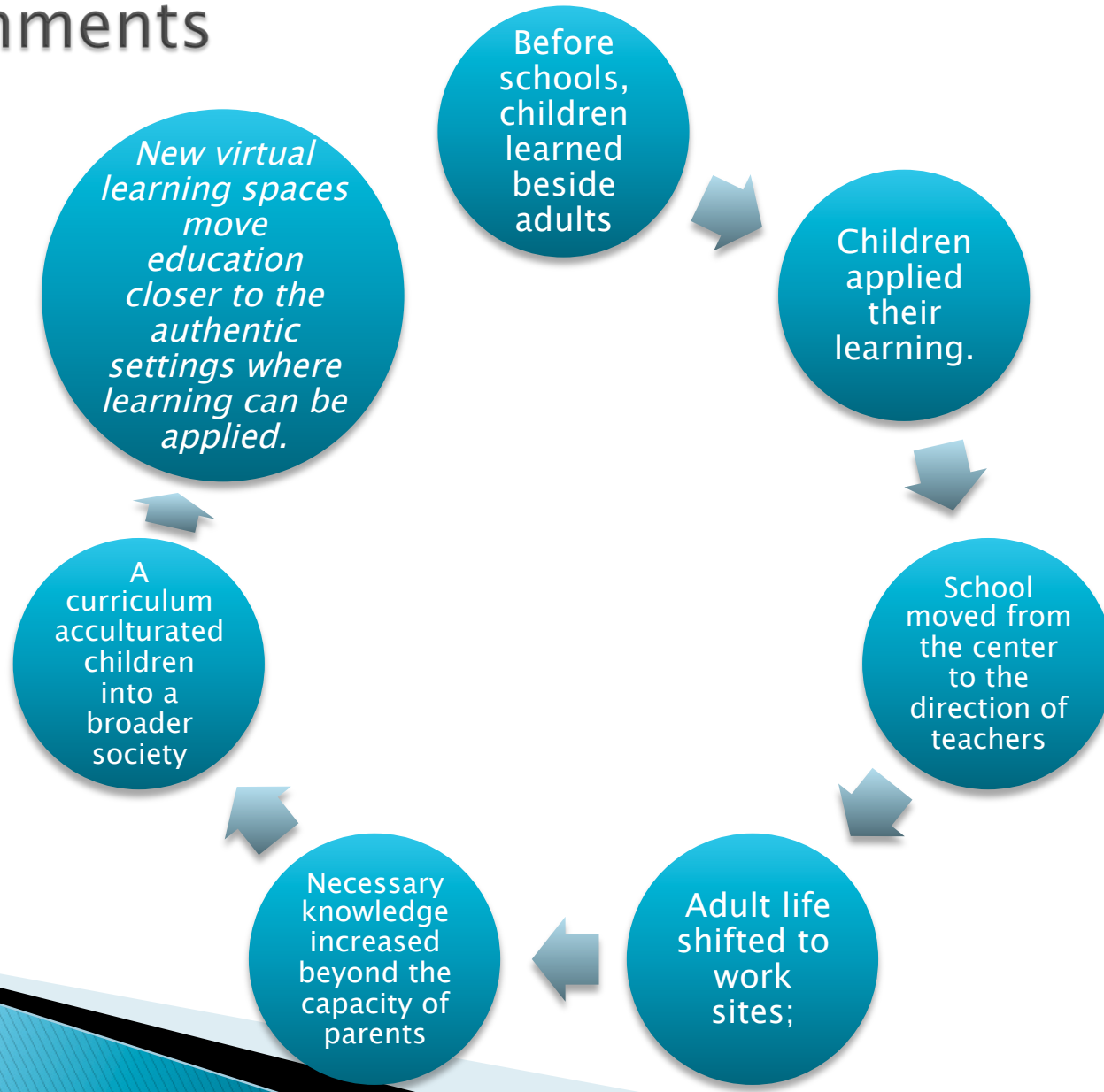
E-learning in Developing and Developed Countries

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E-Learning is a return to traditional learning environments



K-12 e-learning addresses educational problems

UNESCO (2010):

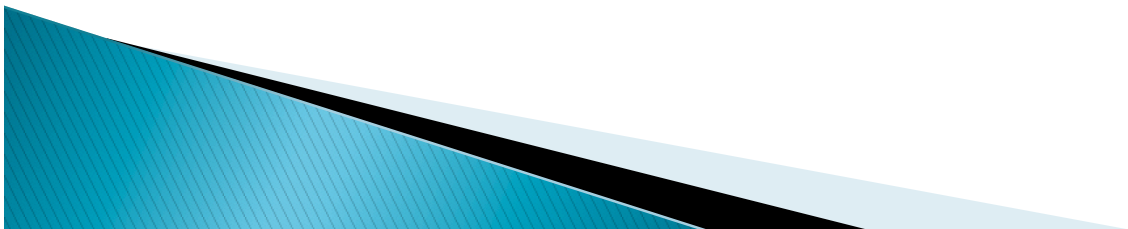
10 million teachers will be needed to meet the world's needs in coming years. Solving the educational access problem with virtual schools in one country provides a model for others.



Need for e-learning in developing countries

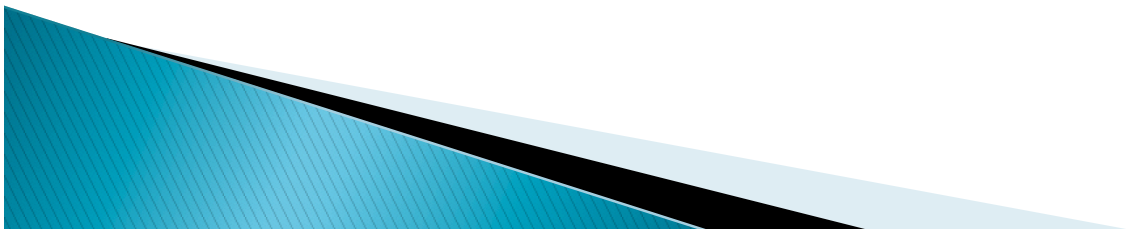
UNICEF 2011:

- ▶ 88% of the world's 1.2 billion adolescents lives in the developing world
- ▶ Nearly half of secondary school age children will not be able to attend school
- ▶ Many adults have not completed primary and secondary education
- ▶ Billions need education in areas where physical schools cannot accommodate them



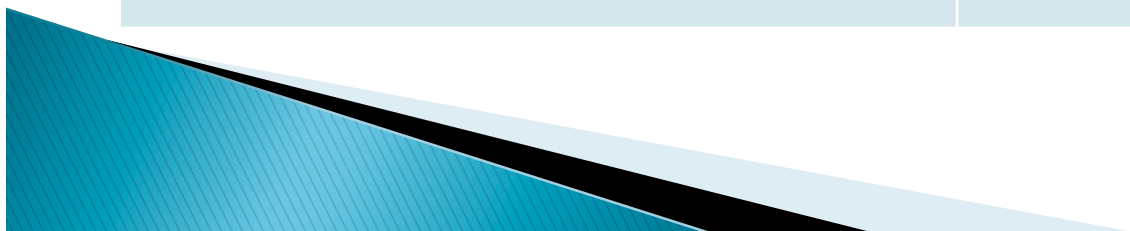
A case in perspective

1. Low development: Nepal
 - #170 in 2010 per capita GDP (CIA)
 - #141 on UN Human Development Index
 - 160,000 children out of school (29m population)
2. Very high development: United Arab Emirates (UAE)
 - #6 in 2010 per capita GDP (CIA)
 - #32 on UN Human Development Index
 - 2600 children out of school (6m population)



Needs addressed by e-learning

Nepal	UAE
<ul style="list-style-type: none">• Lack of toilets for girls• Cost of books and supplies• Keeping children at home to work• Unsafe long walks to school• Lack of employment opportunities• Government instability, bombings, and attacks• Disparity in language and culture of ethnic groups	<ul style="list-style-type: none">• Disparity in language and culture of ethnic groups• Improve quality education in-country• Maintain culture and language in the national population minority• Develop leadership and professional capacity• Provide specialized programs• Religious and legal communication and social restrictions



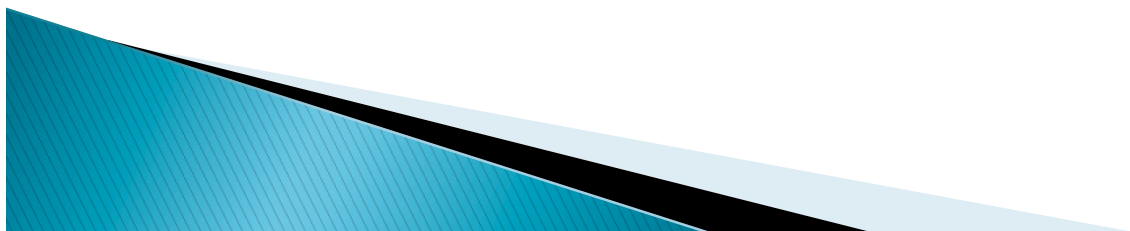
Readiness for e-learning (UN, 2007)

	Nepal	UAE
Electricity	<ul style="list-style-type: none">• 80 kWh pp consumption• 2.8 billion kWh production	<ul style="list-style-type: none">• 16,165 kWh pp consumption• 76.1 billion kWh production
Internet	<ul style="list-style-type: none">• 1 internet user/100 people• 14 phone subscribers/100 people• 60% of people covered by mobile cellular network	<ul style="list-style-type: none">• 65 internet users/100 people• 242 phone subscribers/100 people• 100% of people covered by mobile cellular network

Education indicators (UN, 2007)

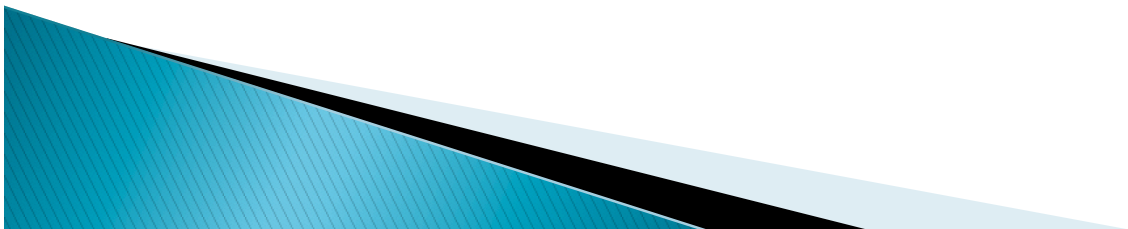
	Nepal	UAE
Pupil teacher ratio	38	13
Primary school net enrollment	89%	92%
Rural population	83%	22%

Nepal and South Asian countries are home to the largest group of adolescents, 335 million, followed by another 329 million in east Asia and Pacific countries. *This is the area where investment in mobile education is most crucial.*



In developing countries, e-learning:

- ▶ Is personalized
- ▶ Increases access to appropriate education opportunity
- ▶ Improves participation in an emerging democracy
- ▶ Prepares professionals for a shifting economy
- ▶ Prepares adults for global engagement



Education and national goals in Nepal

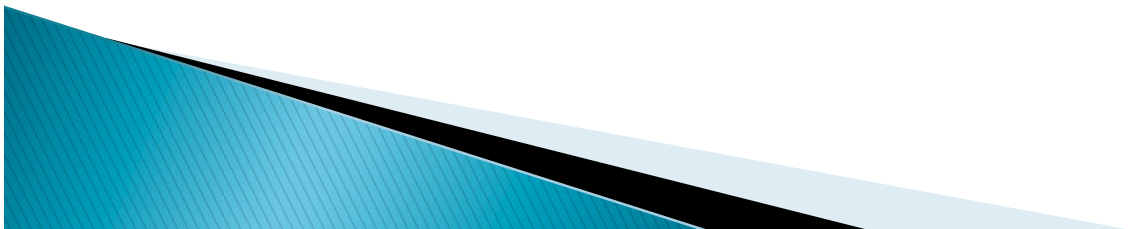
- ▶ Improving living conditions for citizens
- ▶ Unifying 59 different ethnic groups
- ▶ Developing its democracy
- ▶ Diversifying from agriculture to reach economic independence
- ▶ Using technology as a learning and communication tool



Challenges in Nepal

Travel challenges

- ▶ Weekly travel to school is hundreds of kilometers of travel for villagers
- ▶ By motorbike, the pump cost was nearly \$6/gallon for gas when available, or closer to \$8/gallon on the black market, as of 2011. These costs can exceed tuition at the public university over the course of the year.
- ▶ *Online education could reduce or eliminate travel*



Challenges in Nepal

Health challenges

- ▶ Kathmandu, ranked 132 of 140 cities in livability.
- ▶ Pollution and noise adversely impact learning (Lee & Fleming, 2002) with prolonged exposure to noise of 80+ dB, which are commonly exceeded in the city.
- ▶ *Virtual education programs could reduce the relocation of students to the city for education and the exposure of students in the city to the hazards.*



Challenges in Nepal

Family challenges:

- ▶ Children are needed to help at home,
- ▶ Parents have limited ability to assist
- ▶ School costs are beyond many families
- ◆ Homes have limited electrical power, water, and space. Electricity is available as few as eight hours each day
- ◆ Limited refrigeration necessitates daily shopping, and water must be carried to homes



Challenges in Nepal

School challenges:

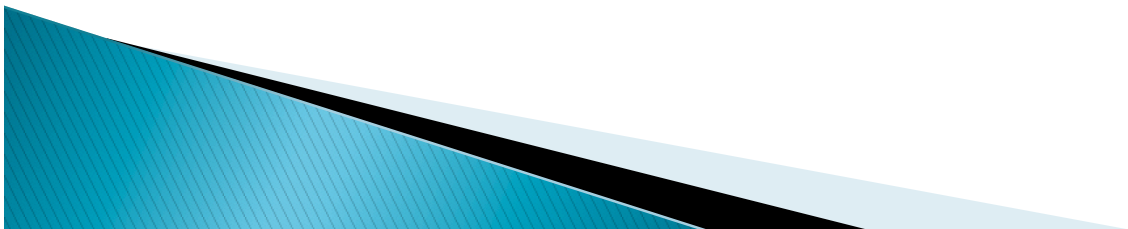
- ▶ Lack of teachers with 4-year degrees,
- ▶ Difficulty hiring teachers in rural areas,
- ▶ Expense of expanding and outfitting schools
- ▶ Adults with inadequate education work abroad. 300,000 workers return up to ¼ of the national GDP, ranking it in the top five countries (2010).
- ▶ Professional positions in Nepal are filled by foreigners.
- ▶ *Communication infrastructure for virtual education would enable villages to host web businesses*



Learning time in Nepal

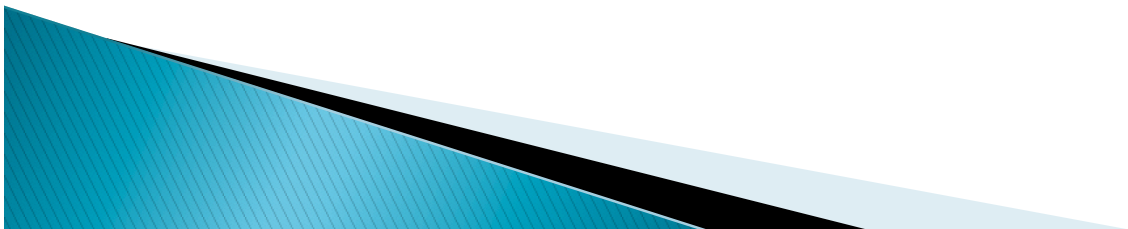
Time is eroded by:

- ▶ Lengthy examination periods
- ▶ Vacations
- ▶ Up to 80 public civil and religious holidays
- ▶ Childhood illnesses, including diarrhea from a shortage of clean water
- ▶ Strikes that bring school, work, and travel to a standstill



Importance of learning time

- ▶ As few as four days of school missed in a year because of snow storms reduced student exam scores (Marcotte & Hemelt, 2008).
- ▶ Online time is cost effective and educationally sound (Cavanaugh, 2009).
- ▶ In Singapore, online lessons and teaching prepare for epidemics, natural disasters, and other events that temporarily close schools (Murphy, 2006).



E-learning infrastructure in Nepal

- ◆ Cell phone signal reaches nationwide and inexpensive phones are widely used
- ◆ Wireless networks are expanding
- ◆ Mobile devices can be powered by solar or hand crank
- ▶ 500 new mobile communication towers are being installed
- ▶ “for every additional 10 mobile phones per 100 people in a developing country, GDP rose 0.6% to 1.2%” (Perry & Wadhams, 2011).



Initial e-learning program in Nepal

Open Learning
Exchange (OLE),

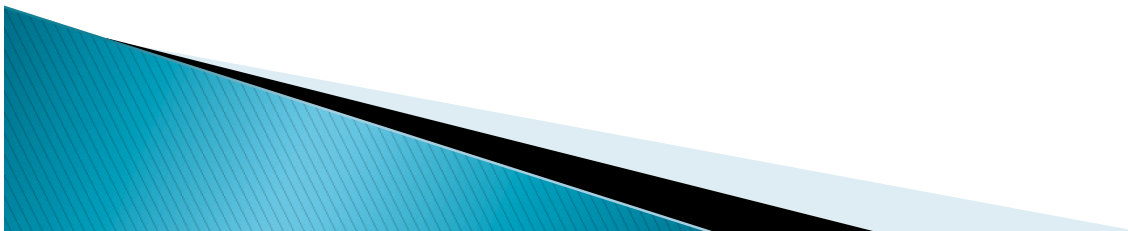
[http://
www.olenepal.org/](http://www olenepal.org/)

- ▶ Digital curriculum
- ▶ Teacher development
- ▶ School networks and computing devices
- ▶ Online library



E-learning potential in Nepal

- ▶ Project-based learning related to alpine health, climate change, local ecosystems, indigenous cultures and arts, and the political system
- ▶ Data, stories, histories, and media in an open online repository
- ▶ Data analysis with the materials in the repository
- ▶ Portal to open education resources, experts within and beyond Nepal, and mentors
- ▶ Teacher education students can design projects, in collaboration with university students in the content areas and computer science.



E-learning in developing countries

- ▶ E-learning technology can cause leapfrogging of learners in developing countries into personalized learning as a norm before developed countries
- ▶ Developed countries have a much higher investment in school-based learning and a much higher school participation rate, making them less agile



Practical steps to e-learning

- ▶ Digital curriculum and references
- ▶ Teacher development in technology
- ▶ Research and leadership in e-learning
- ▶ Mobile communications technology
- ▶ National vision and leadership to bring the components into a system
- ▶ Enlisting expatriates abroad to support the system, serve as mentors and teach online
- ▶ UN clearinghouse of programs and initiatives, virtual and physical conferences for leaders and practitioners.



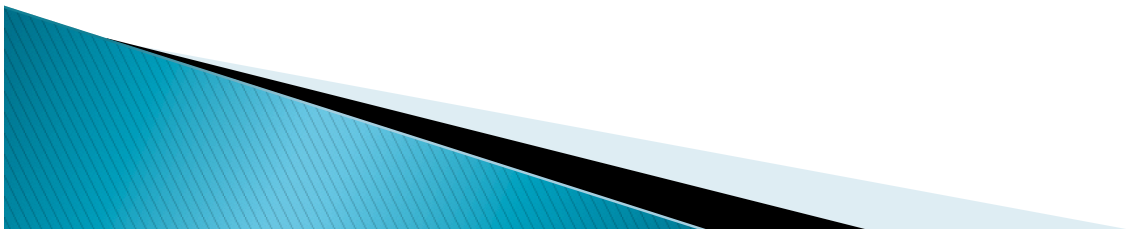
Developing online education in Nepal

Coordination of multiple efforts:

- ▶ Energy researchers for solar and other power
- ▶ Online curriculum developers
- ▶ Technical infrastructure developers

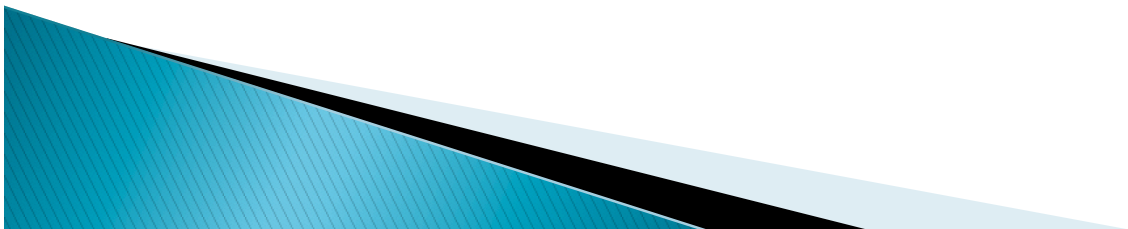
Systemic change:

- ▶ Public education leaders
- ▶ Teacher educators
- ▶ Teachers
- ▶ Students and families



School: site → service

	Objective	Synthesis	Sharing
Learning cycle	Individuals attain core education competencies	Objectives combined into meaningful products or activities	Practical application through exhibition and interaction



Resources

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